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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,827	01/15/2004	Timothy John Havens	141141	1826
7590	02/23/2005		EXAMINER	
Cantor Colburn LLP 55 Griffin Road South Bloomfield, CT 06002			SHRIVASTAV, BRIJ B	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

2

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/707,827		HAVENS ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Brij B. Shrivastav		2859	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                             |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/15/04 and &amp; 1/20</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 6-9 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Edelstein et al (US 4,840,700).

As regards to claim 1, Edelstein et al teach a gradient coil assembly for a magnetic resonance imaging system (figure 1, numerals 20a-20d; column 1, lines 10-35), including at least two coils, wherein at least one coil conductor mechanically bonded via non-conducting substrate (column 14, lines 39-50, the copper conductor is mechanically bound on the fiberglass coil form with the further layers of fiberglass), further wherein the bonding surface of said conductor has been subjected to a surface treatment to improve the mechanical bonding properties of the bonding surface (column 14, lines 39-50, the resin application treats the surface of the conductor for improving bonding properties of its surface).

As regards to claim 9, Edelstein et al teach a magnetic imaging system (figure 19), including a system controller (figure 19, numerals 401; column 1, lines 10-34), and a gradient amplifier unit being in communication with the system controller, and a magnetic assembly being in communication with the gradient amplifier, and magnetic assembly including at least two coils (figure 19; columns 14 and 15, lines 55-68 and 1-

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59). Further, the gradient coil, a conductor, mechanically bonded via non-conducting substrate (column 14, lines 39-50, the copper conductor is mechanically bound on the fiberglass coil form with the further layers of fiberglass), further wherein the bonding surface of said conductor has been subjected to a surface treatment to improve the mechanical bonding properties of the bonding surface (column 14, lines 39-50, the resin application treats the surface of the conductor for improving bonding properties of its surface).

As regards to claim 17, Edelstein et al teach a method for assembling a gradient coil assembly, including a step of treating a bonding surface of at least one conductor (column 14, lines 39-50, resin treatment of the conductor surface), and binding said conductor to a non-conducting surface (column 14, lines 39-50; after resin treatment the conductor is bound to the fiberglass form).

As regards to claims 6-8 and 14-16, Edelstein et al further teach a copper coil conductor mechanically bound as a saddle coil (column 5, lines 19-27 and column 14, lines 35-39)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2 Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edelstein et al (US 4,840,700) as applied to claim 1, 9 and 17 above, and further in view of Crooks (US 5,442,290).

As regards to claim 9, Edelstein et al teach a magnetic imaging system (figure 19), including a system controller (figure 19, numerals 401; column 1, lines 10-34), and a magnetic assembly including at least two coils (figure 19; columns 14 and 15, lines 55-68 and 1-59). Further, the gradient coil, a conductor, mechanically bonded via non-conducting substrate (column 14, lines 39-50, the copper conductor is mechanically bound to the fiberglass coil form with the further layers of fiberglass); further, wherein the bonding surface of said conductor has been subjected to a surface treatment to improve the mechanical bonding properties of the bonding surface (column 14, lines 39-50, the resin application treats the surface of the conductor for improving bonding properties of its surface). However, Edelstein et al do not specifically teach a gradient amplifier unit being in communication with the system controller, and a magnetic assembly being in communication with the gradient amplifier. Crooks teaches a gradient amplifier unit being in communication with the system controller, and a magnetic assembly being in communication with the gradient amplifier (figure 1 and 2, numerals 102,130,142,200).

It would have been obvious to one of ordinary skill in the art to adapt teaching of Crooks with the teaching of Edelstein et al to improve the degree of linearity of the gradient fields along the precisely selected axes to decrease inaccuracies in image data collected, improving image quality.

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3. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edelstein et al (US 4,840,700) as applied to claim 1, 9 and 17 above, and further in view of Sadey et al (US 6,042,711).

As regards to claims 2, 10 and 18, Edelstein et al do not further teach microscopic dendritic structures to the binding surface of the conductor. Sadey et al teach dendritic structures on a metal conductor (figures 1, 2, see abstract). It would have been obvious to one of ordinary skill in the art to adapt Sadey et al's teaching with the teaching of Edelstein et al to improve conductor bonding further to the coil form substrate, improving coil stability for improved performance.

4. Claims 3-5, 11-13, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edelstein et al (US 4,840,700) as applied to claim 1 and 9 above, and further in view of MAGNABOND CO-300 Chemex product sheet dated 9/5/2003 & 11/13/2003.

As regards to claims 3-5, 11-13 and 19-21, Edelstein et al do not further disclose surface treatment of the conductor by coating either with the red, black or brown oxide. The MAGNABOND CO-300 Chemex product sheet provides surface treatment of the conductor by coating either with the red, black or brown oxide. It would have been obvious to one of ordinary skill in the art to coat conductor with a colored copper oxide to identify the coil(s) for easy identification for proper function and maintenance, improving desired gradient field quality.

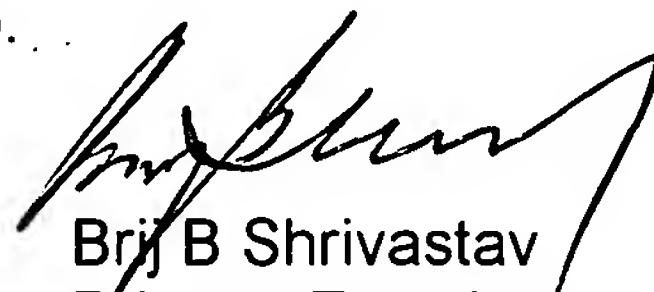
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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brij B. Shrivastav whose telephone number is 571-272-2250. The examiner can normally be reached on 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 19, 2005

  
Brij B Shrivastav  
Primary Examiner  
Art Unit 2859

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